SEQUENCE LISTING

SEQUENCE LISTING
      (1) GENERAL INFORMATION:
            (iii) NUMBER OF SEQUENCES: 23
      (2) INFORMATION FOR SEQ ID NO:1:
            (i) SEQUENCE CHARACTERISTICS:
                  (A) LENGTH: bases
                  (B) TYPE: nucleic acid
                  (C) STRANDEDNESS: single
                  (D) TOPOLOGY: linear
            (ii) MOLECULE TYPE: Synthetic DNA
            (ix) FEATURE:
                  (A) NAME/KEY: *Taq* PolI for
                  (B) LOCATION:
                  (D) OTHER INFORMATION: Used to amplify full-length
                  Taq Pol I coding sequence.
            (xi) SEQUENCE DESCRIPTION: SEQ ID NO:1:

Taq Pol I forward
5'-gc gaattc atgaggggga tgctgcccct ctttgagccc-3'

      (2) INFORMATION FOR SEQ ID NO:2:
            (i) SEQUENCE CHARACTERISTICS:
                  (A) LENGTH: bases
                  (B) TYPE: nucleic acid
                  (C) STRANDEDNESS: single
                  (D) TOPOLOGY: linear
            (ii) MOLECULE TYPE: Synthetic DNA
            (ix) FEATURE:
                  (A) NAME/KEY: *Taq* Pol I rev
                  (B) LOCATION:
                  (D) OTHER INFORMATION: Used to amplify full-length
                  Taq Pol I coding sequence.
            (xi) SEQUENCE DESCRIPTION: SEQ ID NO:2:

Taq Pol I reverse
5'-gc gaattc accctccttgg cggagcgc cagtcctccc-3'

      (2) INFORMATION FOR SEQ ID NO:3:
            (i) SEQUENCE CHARACTERISTICS:
                  (A) LENGTH: bases
                  (B) TYPE: nucleic acid
                  (C) STRANDEDNESS: single
                  (D) TOPOLOGY: linear
            (ii) MOLECULE TYPE: Synthetic DNA
            (ix) FEATURE:
                  (A) NAME/KEY: *Taq* Pol I_A293_trunk
                  (B) LOCATION:
                  (D) OTHER INFORMATION: used to amplify truncated
                  form of *Taq* DNA pol I coding sequence
            (xi) SEQUENCE DESCRIPTION: SEQ ID NO:3:

Taq Pol I_A293_trunk
5'-aatccatgggccctggaggaggc cccctggcccccgc-3'

    (2) INFORMATION FOR SEQ ID NO:4:
        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: bases
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: single
            (D) TOPOLOGY: linear
        (ii) MOLECULE TYPE: Synthetic DNA
        (ix) FEATURE:
            (A) NAME/KEY: *Taq* Pol I_Ala643Cys_fwd
            (B) LOCATION:
            (D) OTHER INFORMATION: used to introduce cys
            mutation into *Taq* DNA pol I coding sequence.
        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:4:

Alanine 643 to Cysteine Replacement
Taq Pol I_Ala643Cys_fwd
5'-C CAC ACG GAG ACC tgC AGC TGG ATG TTC GGC G-3'

    (2) INFORMATION FOR SEQ ID NO:5:
        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: bases
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: single
            (D) TOPOLOGY: linear
        (ii) MOLECULE TYPE: Synthetic DNA
        (ix) FEATURE:
            (A) NAME/KEY: *Taq* Pol I_Ala643Cys_rev
            (B) LOCATION:
            (D) OTHER INFORMATION: used to introduce cys
            mutation into *Taq* DNA pol I coding sequence.
        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:5:

Taq Pol I_Ala643Cys_rev
5'-C GCC GAA CAT CCA CGA Gca GGT CTC CGT GTG G-3'

    (2) INFORMATION FOR SEQ ID NO:6:
        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: bases
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: single
            (D) TOPOLOGY: linear
        (ii) MOLECULE TYPE: Synthetic DNA
        (ix) FEATURE:
            (A) NAME/KEY: *Taq* Pol I_Phe647Cys_fwd
            (B) LOCATION:
            (D) OTHER INFORMATION: used to introduce cys
            mutation into *Taq* DNA pol I coding sequence.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:6:

Phenylalanine 647 to Cysteine Replacement
Taq Pol I_Phe647Cys_fwd
5'-CC GCC AGC TGG ATG TgC GGC GTC CCC CGG GAG GCC-3'

    (2) INFORMATION FOR SEQ ID NO:7:
        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: 1119 bases
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: single
            (D) TOPOLOGY: linear
        (ii) MOLECULE TYPE: Synthetic DNA
        (ix) FEATURE:
            (A) NAME/KEY: *Taq* Pol I_Phe647Cys_rev
            (B) LOCATION:
            (D) OTHER INFORMATION: pro used to introduce cys
            mutation into *Taq* DNA pol I coding sequence.
        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:7:

Taq Pol I_Phe647Cys_rev
5'-GGC CTC CCG GGG GAC GCC GcA CAT CCA CGT GGC GG-3'

    (2) INFORMATION FOR SEQ ID NO:8:
        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: bases
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: single
            (D) TOPOLOGY: linear
        (ii) MOLECULE TYPE: Synthetic DNA
        (ix) FEATURE:
            (A) NAME/KEY: *Taq* Pol I_Val649Cys_fwd
            (B) LOCATION:
            (D) OTHER INFORMATION: used to introduce cys
            mutation into *Taq* DNA pol I coding sequence.
        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:8:

Valine 649 to Cysteine Replacement
Taq Pol I_Val649Cys_fwd
5'-GCC AGC TGG ATG TTC GGC tgC CCC CGG GAG GCC GTG G-3'

    (2) INFORMATION FOR SEQ ID NO:9:
        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH: bases
            (B) TYPE: nucleic acid
            (C) STRANDEDNESS: single
            (D) TOPOLOGY: linear
        (ii) MOLECULE TYPE: Synthetic DNA
        (ix) FEATURE:
            (A) NAME/KEY: *Taq* Pol I_Val649Cys_rev
            (B) LOCATION:

(D) OTHER INFORMATION: used to introduce cys
mutation into *Taq* DNA pol I coding sequence.
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:9:

Taq Pol I_Val649Cys_rev
5'-C CAC GGC CTC CCG GGG Gca GCC GAA CAT CCA GCT GGC-3'

    (2) INFORMATION FOR SEQ ID NO:10:
       (i) SEQUENCE CHARACTERISTICS:
          (A) LENGTH: bases
          (B) TYPE: nucleic acid
          (C) STRANDEDNESS: single
          (D) TOPOLOGY: linear
      (ii) MOLECULE TYPE: Synthetic DNA
      (ix) FEATURE:
          (A) NAME/KEY: *Taq* Pol I_Glu652Cys_fwd
          (B) LOCATION:
          (D) OTHER INFORMATION: used to introduce cys
mutation into *Taq* DNA pol I coding sequence.
      (xi) SEQUENCE DESCRIPTION: SEQ ID NO:10:

Glutamic Acid 652 to Cysteine Replacement
Taq Pol I_Glu652Cys_fwd
5'-GGC GTC CCC CGG tgc GCC GTG GAC CCC CTG ATG CGC-3'

    (2) INFORMATION FOR SEQ ID NO:11:
       (i) SEQUENCE CHARACTERISTICS:
          (A) LENGTH: bases
          (B) TYPE: nucleic acid
          (C) STRANDEDNESS: single
          (D) TOPOLOGY: linear
      (ii) MOLECULE TYPE: Synthetic DNA
      (ix) FEATURE:
          (A) NAME/KEY: *Taq* PolI_Glu652Cys_rev
          (B) LOCATION:
          (D) OTHER INFORMATION: used to introduce cys
mutation into *Taq* DNA pol I coding sequence.
      (xi) SEQUENCE DESCRIPTION: SEQ ID NO:11:

Taq PolI_Glu652Cys_rev
5'-GCG CAT CAG GGG GTC CAC GGC gca CCG GGG GAC GCC-3'

    (2) INFORMATION FOR SEQ ID NO:12:
       (i) SEQUENCE CHARACTERISTICS:
          (A) LENGTH: bases
          (B) TYPE: nucleic acid
          (C) STRANDEDNESS: single
          (D) TOPOLOGY: linear
      (ii) MOLECULE TYPE: Synthetic DNA
      (ix) FEATURE:
          (A) NAME/KEY: *Taq* Pol I_Ala653Cys_fwd

(B) LOCATION:
                    (D) OTHER INFORMATION: used to introduce cys
                    mutation into *Taq* DNA pol I coding sequence.
            (xi) SEQUENCE DESCRIPTION: SEQ ID NO:12:

Alanine 653 to Cysteine Replacement
Taq Pol I_Ala653Cys_fwd
5'-GGC GTC CCC CGG GAG tgC GTG GAC CCC CTG ATG CGC-3'

        (2) INFORMATION FOR SEQ ID NO:13:
            (i) SEQUENCE CHARACTERISTICS:
                    (A) LENGTH: bases
                    (B) TYPE: nucleic acid
                    (C) STRANDEDNESS: single
                    (D) TOPOLOGY: linear
            (ii) MOLECULE TYPE: Synthetic DNA
            (ix) FEATURE:
                    (A) NAME/KEY: *Taq* Pol I_Ala653Cys_rev
                    (B) LOCATION:
                    (D) OTHER INFORMATION: used to introduce cys
                    mutation into *Taq* DNA pol I coding sequence.
            (xi) SEQUENCE DESCRIPTION: SEQ ID NO:13:

Taq Pol I_Ala653Cys_rev
5'-GCG CAT CAG GGG GTC CAC Gca CTC CCG GGG GAC GCC-3'

        (2) INFORMATION FOR SEQ ID NO:14:
            (i) SEQUENCE CHARACTERISTICS:
                    (A) LENGTH: bases
                    (B) TYPE: nucleic acid
                    (C) STRANDEDNESS: single
                    (D) TOPOLOGY: linear
            (ii) MOLECULE TYPE: Synthetic DNA
            (ix) FEATURE:
                    (A) NAME/KEY: *Taq* Pol I_Val654Cys_fwd
                    (B) LOCATION:
                    (D) OTHER INFORMATION: used to introduce cys
                    mutation into *Taq* DNA pol I coding sequence.
            (xi) SEQUENCE DESCRIPTION: SEQ ID NO:14:

Valine 654 to Cysteine Replacement
Taq Pol I_Val654Cys_fwd
5'-GTC CCC CGG GAG GCC tgt GAC CCC CTG ATG CGC-3'

        (2) INFORMATION FOR SEQ ID NO:15:
            (i) SEQUENCE CHARACTERISTICS:
                    (A) LENGTH: bases
                    (B) TYPE: nucleic acid
                    (C) STRANDEDNESS: single
                    (D) TOPOLOGY: linear
            (ii) MOLECULE TYPE: Synthetic DNA

(ix) FEATURE:
            (A) NAME/KEY: *Taq* PolI_Val654Cys_rev
            (B) LOCATION:
            (D) OTHER INFORMATION: used to introduce cys
            mutation into *Taq* DNA pol I coding sequence.
        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:15:

Taq PolI_Val654Cys_rev
5'-GCG CAT CAG GGG GTC aca GGC CTC CCG GGG GAC-3'

        (2) INFORMATION FOR SEQ ID NO:16:
            (i) SEQUENCE CHARACTERISTICS:
                (A) LENGTH: bases
                (B) TYPE: nucleic acid
                (C) STRANDEDNESS: single
                (D) TOPOLOGY: linear
            (ii) MOLECULE TYPE: Synthetic DNA
            (ix) FEATURE:
                (A) NAME/KEY: *Taq* Pol I_D655C_fwd
                (B) LOCATION:
                (D) OTHER INFORMATION: used to introduce cys
                mutation into *Taq* DNA pol I coding sequence.
            (xi) SEQUENCE DESCRIPTION: SEQ ID NO:16:

Aspartic Acid 655 to Cysteine Replacement
Taq Pol I_D655C_fwd
5'-CCC CGG GAG GCC GTG tgC CCC CTG ATG CGC CGG-3'

        (2) INFORMATION FOR SEQ ID NO:17:
            (i) SEQUENCE CHARACTERISTICS:
                (A) LENGTH: bases
                (B) TYPE: nucleic acid
                (C) STRANDEDNESS: single
                (D) TOPOLOGY: linear
            (ii) MOLECULE TYPE: Synthetic DNA
            (ix) FEATURE:
                (A) NAME/KEY: *Taq* Pol I_D655C_rev
                (B) LOCATION:
                (D) OTHER INFORMATION: used to introduce cys
                mutation into *Taq* DNA pol I coding sequence.
            (xi) SEQUENCE DESCRIPTION: SEQ ID NO:17:

Taq Pol I_D655C_rev
5'-CCG GCG CAT CAG GGG Gca CAC GGC CTC CCG GGG-3'

        (2) INFORMATION FOR SEQ ID NO:18:
            (i) SEQUENCE CHARACTERISTICS:
                (A) LENGTH: bases
                (B) TYPE: nucleic acid
                (C) STRANDEDNESS: single
                (D) TOPOLOGY: linear

```
          (ii) MOLECULE TYPE: Synthetic DNA
          (ix) FEATURE:
               (A) NAME/KEY: Taq Pol I_Pro656Cys_fwd
               (B) LOCATION:
               (D)  OTHER  INFORMATION:  used  to  introduce  cys
               mutation into Taq DNA pol I coding sequence.
          (xi) SEQUENCE DESCRIPTION: SEQ ID NO:18:

Proline 656 to Cysteine Replacement
Taq Pol I_Pro656Cys_fwd
5'-CGG GAG GCC GTG GAC tgC CTG ATG CGC CGG GCG-3'


     (2) INFORMATION FOR SEQ ID NO:19:
          (i) SEQUENCE CHARACTERISTICS:
               (A) LENGTH: bases
               (B) TYPE: nucleic acid
               (C) STRANDEDNESS: single
               (D) TOPOLOGY: linear
          (ii) MOLECULE TYPE: Synthetic DNA
          (ix) FEATURE:
               (A) NAME/KEY: Taq Pol I_Pro656Cys_rev
               (B) LOCATION:
               (D)  OTHER  INFORMATION:  used  to  introduce  cys
               mutation into Taq DNA pol I coding sequence.
          (xi) SEQUENCE DESCRIPTION: SEQ ID NO:19:

Taq Pol I_Pro656Cys_rev
5'-CGC CCG GCG CAT CAG Gca GTC CAC GGC CTC CCG-3'


     (2) INFORMATION FOR SEQ ID NO:20:
          (i) SEQUENCE CHARACTERISTICS:
               (A) LENGTH: bases
               (B) TYPE: nucleic acid
               (C) STRANDEDNESS: single
               (D) TOPOLOGY: linear
          (ii) MOLECULE TYPE: Synthetic DNA
          (ix) FEATURE:
               (A) NAME/KEY: Taq Pol I_Leu657Cys_fwd
               (B) LOCATION:
               (D)  OTHER  INFORMATION:  used  to  introduce  cys
               mutation into Taq DNA pol I coding sequence.
          (xi) SEQUENCE DESCRIPTION: SEQ ID NO:20:

Leucine 657 to Cysteine Replacement
Taq Pol I_Leu657Cys_fwd
5'-GCC GTG GAC CCC tgc ATG CGC CGG GCG GCC-3'


     (2) INFORMATION FOR SEQ ID NO:21:
          (i) SEQUENCE CHARACTERISTICS:
               (A) LENGTH: bases
               (B) TYPE: nucleic acid
```

```
                    (C) STRANDEDNESS: single
                    (D) TOPOLOGY: linear
            (ii) MOLECULE TYPE: Synthetic DNA
            (ix) FEATURE:
                    (A) NAME/KEY: Taq Pol I_Leu657Cys_rev
                    (B) LOCATION:
                    (D)  OTHER  INFORMATION:  used  to  introduce  cys
                    mutation into Taq DNA pol I coding sequence.
            (xi) SEQUENCE DESCRIPTION: SEQ ID NO:21:


Taq Pol I_Leu657Cys_rev
5'-GGC CGC CCG GCG CAT gca GGG GTC CAC GGC-3'


        (2) INFORMATION FOR SEQ ID NO:22:
            (i) SEQUENCE CHARACTERISTICS:
                    (A) LENGTH: bases
                    (B) TYPE: nucleic acid
                    (C) STRANDEDNESS: single
                    (D) TOPOLOGY: linear
            (ii) MOLECULE TYPE: Synthetic DNA
            (ix) FEATURE:
                    (A) NAME/KEY: Taq Pol I_Met658Cys_fwd
                    (B) LOCATION:
                    (D)  OTHER  INFORMATION:  used  to  introduce  cys
                    mutation into Taq DNA pol I coding sequence.
            (xi) SEQUENCE DESCRIPTION: SEQ ID NO:22:


Methionine 658 to Cysteine Replacement
Taq Pol I_Met658Cys_fwd
5'-GCC GTG GAC CCC CTG tgt CGC CGG GCG GCC-3'


        (2) INFORMATION FOR SEQ ID NO:23:
            (i) SEQUENCE CHARACTERISTICS:
                    (A) LENGTH: bases
                    (B) TYPE: nucleic acid
                    (C) STRANDEDNESS: single
                    (D) TOPOLOGY: linear
            (ii) MOLECULE TYPE: Synthetic DNA
            (ix) FEATURE:
                    (A) NAME/KEY: Taq Pol I_Met658Cys_rev
                    (B) LOCATION:
                    (D)  OTHER  INFORMATION:  used  to  introduce  cys
                    mutation into Taq DNA pol I coding sequence.
            (xi) SEQUENCE DESCRIPTION: SEQ ID NO:23:


Taq Pol I_Met658Cys_rev
5'-GGC CGC CCG GCG aca CAG GGG GTC CAC GGC-3'


        (2) INFORMATION FOR SEQ ID NO:24:
            (i) SEQUENCE CHARACTERISTICS:
                    (A) LENGTH: bases
```

(B) TYPE: nucleic acid
                              (C) STRANDEDNESS: single
                              (D) TOPOLOGY: linear
                         (ii) MOLECULE TYPE: Synthetic DNA
                         (ix) FEATURE:
                              (A) NAME/KEY: *Taq* Pol I_Arg659Cys_fwd
                              (B) LOCATION:
                              (D) OTHER INFORMATION: used to introduce cys
                              mutation into *Taq* DNA pol I coding sequence.
                         (xi) SEQUENCE DESCRIPTION: SEQ ID NO:24:

Arginine 659 to Cysteine Replacement
Taq Pol I_Arg659Cys_fwd
5'-GCC GTG GAC CCC CTG ATG tGC CGG GCG GCC AAG ACC-3'

          (2) INFORMATION FOR SEQ ID NO:25:
               (i) SEQUENCE CHARACTERISTICS:
                    (A) LENGTH: bases
                    (B) TYPE: nucleic acid
                    (C) STRANDEDNESS: single
                    (D) TOPOLOGY: linear
               (ii) MOLECULE TYPE: Synthetic DNA
               (ix) FEATURE:
                    (A) NAME/KEY: *Taq* Pol I_Arg659Cys_rev
                    (B) LOCATION:
                    (D) OTHER INFORMATION: used to introduce cys
                    mutation into *Taq* DNA pol I coding sequence.
               (xi) SEQUENCE DESCRIPTION: SEQ ID NO:25:

Taq Pol I_Arg659Cys_rev
5'-GGT CTT GGC CGC CCG GCa CAT CAG GGG GTC CAC GGC-3'

          (2) INFORMATION FOR SEQ ID NO:26:
               (i) SEQUENCE CHARACTERISTICS:
                    (A) LENGTH: bases
                    (B) TYPE: nucleic acid
                    (C) STRANDEDNESS: single
                    (D) TOPOLOGY: linear
               (ii) MOLECULE TYPE: Synthetic DNA
               (ix) FEATURE:
                    (A) NAME/KEY: *Taq* Pol I_Arg660Cys_fwd
                    (B) LOCATION:
                    (D) OTHER INFORMATION: used to introduce cys
                    mutation into *Taq* DNA pol I coding sequence.
               (xi) SEQUENCE DESCRIPTION: SEQ ID NO:26:

Arginine 660 to Cysteine Replacement
Taq Pol I_Arg660Cys_fwd
5'-GAC CCC CTG ATG CGC tGc GCG GCC AAG ACC ATC-3'

          (2) INFORMATION FOR SEQ ID NO:27:

```
        (i)  SEQUENCE CHARACTERISTICS:
            (A)  LENGTH: bases
            (B)  TYPE: nucleic acid
            (C)  STRANDEDNESS: single
            (D)  TOPOLOGY: linear
        (ii) MOLECULE TYPE: Synthetic DNA
        (ix) FEATURE:
            (A)  NAME/KEY: Taq Pol I_Arg660Cys_rev
            (B)  LOCATION:
            (D)  OTHER  INFORMATION:  used  to  introduce  cys
            mutation into Taq DNA pol I coding sequence.
        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:27:

Taq Pol I_Arg660Cys_rev
5'-GAT GGT CTT GGC CGC gCa GCG CAT CAG GGG GTC-3'


    (2)  INFORMATION FOR SEQ ID NO:28:
        (i)  SEQUENCE CHARACTERISTICS:
            (A)  LENGTH: bases
            (B)  TYPE: nucleic acid
            (C)  STRANDEDNESS: single
            (D)  TOPOLOGY: linear
        (ii) MOLECULE TYPE: Synthetic DNA
        (ix) FEATURE:
            (A)  NAME/KEY: Taq Pol I_Ala661Cys_fwd
            (B)  LOCATION:
            (D)  OTHER  INFORMATION:  used  to  introduce  cys
            mutation into Taq DNA pol I coding sequence.
        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:28:

Alanine 661 to Cysteine Replacement
Taq Pol I_Ala661Cys_fwd
5'-CCC CTG ATG CGC CGG tgc GCC AAG ACC ATC AAC-3'


    (2)  INFORMATION FOR SEQ ID NO:29:
        (i)  SEQUENCE CHARACTERISTICS:
            (A)  LENGTH: bases
            (B)  TYPE: nucleic acid
            (C)  STRANDEDNESS: single
            (D)  TOPOLOGY: linear
        (ii) MOLECULE TYPE: Synthetic DNA
        (ix) FEATURE:
            (A)  NAME/KEY: Taq Pol I_Ala661Cys_rev
            (B)  LOCATION:
            (D)  OTHER  INFORMATION:  used  to  introduce  cys
            mutation into Taq DNA pol I coding sequence.
        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:29:

Taq Pol I_Ala661Cys_rev
5'-GTT GAT GGT CTT GGC gca CCG GCG CAT CAG GGG-3'
```

(2) INFORMATION FOR SEQ ID NO:30:
    (i) SEQUENCE CHARACTERISTICS:
        (A) LENGTH:
        (B) TYPE: amino acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY:
    (ii) MOLECULE TYPE: polypeptide region of *Taq* DNA
        polymerase
    (ix) FEATURE:
        (A) NAME/KEY:
        (B) LOCATION:
        (D) OTHER INFORMATION: polypeptide region of *Taq*
        DNA polymerase containing mutation for tag
        attachment.
    (xi) SEQUENCE DESCRIPTION: SEQ ID NO:30:

Cys Ser Trp Met Phe Gly Val Pro Arg Glu Ala Val Asp Pro Leu Met
643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658
Arg Arg Ala
659 660 661

    (2) INFORMATION FOR SEQ ID NO:31:
        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH:
            (B) TYPE: amino acid
            (C) STRANDEDNESS: single
            (D) TOPOLOGY:
        (ii) MOLECULE TYPE: polypeptide region of *Taq* DNA
            polymerase
        (ix) FEATURE:
            (A) NAME/KEY:
            (B) LOCATION:
            (D) OTHER INFORMATION: polypeptide region of *Taq*
            DNA polymerase containing mutation for tag
            attachment.
        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:31:

Ala Ser Trp Met Cys Gly Val Pro Arg Glu Ala Val Asp Pro Leu Met
643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658
Arg Arg Ala
659 660 661

    (2) INFORMATION FOR SEQ ID NO:32:
        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH:
            (B) TYPE: amino acid
            (C) STRANDEDNESS: single
            (D) TOPOLOGY:
        (ii) MOLECULE TYPE: polypeptide region of *Taq* DNA
            polymerase
        (ix) FEATURE:

(A) NAME/KEY:
                    (B) LOCATION:
                    (D) OTHER INFORMATION: polypeptide region of *Taq*
                    DNA polymerase containing mutation for tag
                    attachment.
          (xi) SEQUENCE DESCRIPTION: SEQ ID NO:32:

Ala Ser Trp Met Phe Gly Cys Pro Arg Glu Ala Val Asp Pro Leu Met
643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658
Arg Arg Ala
659 660 661

          (2) INFORMATION FOR SEQ ID NO:33:
               (i) SEQUENCE CHARACTERISTICS:
                    (A) LENGTH:
                    (B) TYPE: amino acid
                    (C) STRANDEDNESS: single
                    (D) TOPOLOGY:
               (ii) MOLECULE TYPE: polypeptide region of *Taq* DNA
                    polymerase
               (ix) FEATURE:
                    (A) NAME/KEY:
                    (B) LOCATION:
                    (D) OTHER INFORMATION: polypeptide region of *Taq*
                    DNA polymerase containing mutation for tag
                    attachment.
          (xi) SEQUENCE DESCRIPTION: SEQ ID NO:33:

Ala Ser Trp Met Phe Gly Val Pro Arg Cys Ala Val Asp Pro Leu Met
643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658
Arg Arg Ala
659 660 661

          (2) INFORMATION FOR SEQ ID NO:34:
               (i) SEQUENCE CHARACTERISTICS:
                    (A) LENGTH:
                    (B) TYPE: amino acid
                    (C) STRANDEDNESS: single
                    (D) TOPOLOGY:
               (ii) MOLECULE TYPE: polypeptide region of *Taq* DNA
                    polymerase
               (ix) FEATURE:
                    (A) NAME/KEY:
                    (B) LOCATION:
                    (D) OTHER INFORMATION: polypeptide region of *Taq*
                    DNA polymerase containing mutation for tag
                    attachment.
          (xi) SEQUENCE DESCRIPTION: SEQ ID NO:34:

Ala Ser Trp Met Phe Gly Val Pro Arg Glu Cys Val Asp Pro Leu Met
643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658

Arg Arg Ala
659 660 661

        (2) INFORMATION FOR SEQ ID NO:35:
            (i) SEQUENCE CHARACTERISTICS:
                (A) LENGTH:
                (B) TYPE: amino acid
                (C) STRANDEDNESS: single
                (D) TOPOLOGY:
            (ii) MOLECULE TYPE: polypeptide region of *Taq* DNA
                polymerase
            (ix) FEATURE:
                (A) NAME/KEY:
                (B) LOCATION:
                (D) OTHER INFORMATION: polypeptide region of *Taq*
                DNA polymerase containing mutation for tag
                attachment.
            (xi) SEQUENCE DESCRIPTION: SEQ ID NO:35:

Ala Ser Trp Met Phe Gly Val Pro Arg Glu Ala Cys Asp Pro Leu Met
643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658
Arg Arg Ala
659 660 661

        (2) INFORMATION FOR SEQ ID NO:36:
            (i) SEQUENCE CHARACTERISTICS:
                (A) LENGTH:
                (B) TYPE: amino acid
                (C) STRANDEDNESS: single
                (D) TOPOLOGY:
            (ii) MOLECULE TYPE: polypeptide region of *Taq* DNA
                polymerase
            (ix) FEATURE:
                (A) NAME/KEY:
                (B) LOCATION:
                (D) OTHER INFORMATION: polypeptide region of *Taq*
                DNA polymerase containing mutation for tag
                attachment.
            (xi) SEQUENCE DESCRIPTION: SEQ ID NO:36:

Ala Ser Trp Met Phe Gly Val Pro Arg Glu Ala Val Cys Pro Leu Met
643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658
Arg Arg Ala
659 660 661

        (2) INFORMATION FOR SEQ ID NO:37:
            (i) SEQUENCE CHARACTERISTICS:
                (A) LENGTH:
                (B) TYPE: amino acid
                (C) STRANDEDNESS: single
                (D) TOPOLOGY:

```
            (ii)  MOLECULE  TYPE:  polypeptide  region  of  Taq  DNA
                  polymerase
            (ix)  FEATURE:
                  (A) NAME/KEY:
                  (B) LOCATION:
                  (D) OTHER INFORMATION: polypeptide region of Taq
                  DNA  polymerase  containing  mutation  for  tag
                  attachment.
            (xi)  SEQUENCE DESCRIPTION: SEQ ID NO:37:

Ala Ser Trp Met Phe Gly Val Pro Arg Glu Ala Val Asp Cys Leu Met
643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658
Arg Arg Ala
659 660 661


      (2)  INFORMATION FOR SEQ ID NO:38:
            (i)  SEQUENCE CHARACTERISTICS:
                  (A) LENGTH:
                  (B) TYPE: amino acid
                  (C) STRANDEDNESS: single
                  (D) TOPOLOGY:
            (ii)  MOLECULE  TYPE:  polypeptide  region  of  Taq  DNA
                  polymerase
            (ix)  FEATURE:
                  (A) NAME/KEY:
                  (B) LOCATION:
                  (D) OTHER INFORMATION: polypeptide region of Taq
                  DNA  polymerase  containing  mutation  for  tag
                  attachment.
            (xi)  SEQUENCE DESCRIPTION: SEQ ID NO:38:

Ala Ser Trp Met Phe Gly Val Pro Arg Glu Ala Val Asp Pro Cys Met
643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658
Arg Arg Ala
659 660 661


      (2)  INFORMATION FOR SEQ ID NO:39:
            (i)  SEQUENCE CHARACTERISTICS:
                  (A) LENGTH:
                  (B) TYPE: amino acid
                  (C) STRANDEDNESS: single
                  (D) TOPOLOGY:
            (ii)  MOLECULE  TYPE:  polypeptide  region  of  Taq  DNA
                  polymerase
            (ix)  FEATURE:
                  (A) NAME/KEY:
                  (B) LOCATION:
                  (D) OTHER INFORMATION: polypeptide region of Taq
                  DNA  polymerase  containing  mutation  for  tag
                  attachment.
            (xi)  SEQUENCE DESCRIPTION: SEQ ID NO:39:
```

```
Ala Ser Trp Met Phe Gly Val Pro Arg Glu Ala Val Asp Pro Leu Cys
643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658
Arg Arg Ala
659 660 661
```

```
        (2)  INFORMATION FOR SEQ ID NO:40:
             (i)  SEQUENCE CHARACTERISTICS:
                  (A)  LENGTH:
                  (B)  TYPE: amino acid
                  (C)  STRANDEDNESS: single
                  (D)  TOPOLOGY:
             (ii)  MOLECULE  TYPE:  polypeptide  region  of  Taq  DNA
                   polymerase
             (ix)  FEATURE:
                  (A)  NAME/KEY:
                  (B)  LOCATION:
                  (D)  OTHER INFORMATION: polypeptide region of Taq
                  DNA  polymerase  containing  mutation  for  tag
                  attachment.
             (xi)  SEQUENCE DESCRIPTION: SEQ ID NO:40:
```

```
Ala Ser Trp Met Phe Gly Val Pro Arg Glu Ala Val Asp Pro Leu Met
643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658
Cys Arg Ala
659 660 661
```

```
        (2)  INFORMATION FOR SEQ ID NO:41:
             (i)  SEQUENCE CHARACTERISTICS:
                  (A)  LENGTH:
                  (B)  TYPE: amino acid
                  (C)  STRANDEDNESS: single
                  (D)  TOPOLOGY:
             (ii)  MOLECULE  TYPE:  polypeptide  region  of  Taq  DNA
                   polymerase
             (ix)  FEATURE:
                  (A)  NAME/KEY:
                  (B)  LOCATION:
                  (D)  OTHER INFORMATION: polypeptide region of Taq
                  DNA  polymerase  containing  mutation  for  tag
                  attachment.
             (xi)  SEQUENCE DESCRIPTION: SEQ ID NO:41:
```

```
Ala Ser Trp Met Phe Gly Val Pro Arg Glu Ala Val Asp Pro Leu Met
643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658
Arg Cys Ala
659 660 661
```

```
        (2)  INFORMATION FOR SEQ ID NO:42:
             (i)  SEQUENCE CHARACTERISTICS:
                  (A)  LENGTH:
```

(B) TYPE: amino acid
            (C) STRANDEDNESS: single
            (D) TOPOLOGY:
        (ii) MOLECULE TYPE: polypeptide region of *Taq* DNA
             polymerase
        (ix) FEATURE:
            (A) NAME/KEY:
            (B) LOCATION:
            (D) OTHER INFORMATION: polypeptide region of *Taq*
            DNA polymerase containing mutation for tag
            attachment.
        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:42:

Ala Ser Trp Met Phe Gly Val Pro Arg Glu Ala Val Asp Pro Leu Met
643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658
Arg Arg Cys
659 660 661

    (2) INFORMATION FOR SEQ ID NO:43:
        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH:
            (B) TYPE: amino acid
            (C) STRANDEDNESS: single
            (D) TOPOLOGY:
        (ii) MOLECULE TYPE: polypeptide region of *Taq* DNA
             polymerase
        (ix) FEATURE:
            (A) NAME/KEY:
            (B) LOCATION:
            (D) OTHER INFORMATION: polypeptide region of *Taq*
            DNA polymerase containing mutation for tag
            attachment.
        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:43:

Cys Thr Ser Ala Ala Val
513 514 515 516 517 518

    (2) INFORMATION FOR SEQ ID NO:44:
        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH:
            (B) TYPE: amino acid
            (C) STRANDEDNESS: single
            (D) TOPOLOGY:
        (ii) MOLECULE TYPE: polypeptide region of *Taq* DNA
             polymerase
        (ix) FEATURE:
            (A) NAME/KEY:
            (B) LOCATION:
            (D) OTHER INFORMATION: polypeptide region of *Taq*
            DNA polymerase containing mutation for tag
            attachment.

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:44:

Ser Cys Ser Ala Ala Val
513 514 515 516 517 518

    (2) INFORMATION FOR SEQ ID NO:45:
        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH:
            (B) TYPE: amino acid
            (C) STRANDEDNESS: single
            (D) TOPOLOGY:
        (ii) MOLECULE TYPE: polypeptide region of *Taq* DNA
            polymerase
        (ix) FEATURE:
            (A) NAME/KEY:
            (B) LOCATION:
            (D) OTHER INFORMATION: polypeptide region of *Taq*
            DNA polymerase containing mutation for tag
            attachment.
        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:45:

Ser Thr Cys Ala Ala Val
513 514 515 516 517 518

    (2) INFORMATION FOR SEQ ID NO:46:
        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH:
            (B) TYPE: amino acid
            (C) STRANDEDNESS: single
            (D) TOPOLOGY:
        (ii) MOLECULE TYPE: polypeptide region of *Taq* DNA
            polymerase
        (ix) FEATURE:
            (A) NAME/KEY:
            (B) LOCATION:
            (D) OTHER INFORMATION: polypeptide region of *Taq*
            DNA polymerase containing mutation for tag
            attachment.
        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:46:

Ser Thr Ser Cys Ala Val
513 514 515 516 517 518

    (2) INFORMATION FOR SEQ ID NO:47:
        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH:
            (B) TYPE: amino acid
            (C) STRANDEDNESS: single
            (D) TOPOLOGY:
        (ii) MOLECULE TYPE: polypeptide region of *Taq* DNA
            polymerase

```
(ix) FEATURE:
    (A) NAME/KEY:
    (B) LOCATION:
    (D) OTHER INFORMATION: polypeptide region of Taq
    DNA polymerase containing mutation for tag
    attachment.
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:47:

Ser Thr Ser Ala Cys Val
513 514 515 516 517 518

    (2) INFORMATION FOR SEQ ID NO:48:
        (i) SEQUENCE CHARACTERISTICS:
            (A) LENGTH:
            (B) TYPE: amino acid
            (C) STRANDEDNESS: single
            (D) TOPOLOGY:
        (ii) MOLECULE TYPE: polypeptide region of Taq DNA
            polymerase
        (ix) FEATURE:
            (A) NAME/KEY:
            (B) LOCATION:
            (D) OTHER INFORMATION: polypeptide region of Taq
            DNA polymerase containing mutation for tag
            attachment.
        (xi) SEQUENCE DESCRIPTION: SEQ ID NO:48:

Ser Thr Ser Ala Ala Cys
513 514 515 516 517 518
```